

Crustacea Decapoda: Ethusinae (Dorippidae), mainly from the KARUBAR Cruise

CHEN Huilian (H. L. CHEN)

Institute of Oceanology, Academia Sinica,
7 Nan-Hai Road, Qinnгдаo 266071, China

ABSTRACT

Material of Ethusinae collected by a French-Indonesian expedition in Indonesia (KARUBAR, 1991), and two French expeditions to Wallis and Futuna Islands (MUSORSTOM 7, 1992), and off New Caledonia (BATHUS 3, 1993) yielded a total of 11 species belonging to three genera. One genus and five species are new and three species are recorded for the first time from Indonesia.

RÉSUMÉ

Crustacea Decapoda : Ethusinae (Dorippidae) récoltés principalement lors de la campagne KARUBAR.

Les Ethusinae récoltées par une expédition franco-indonésienne en Indonésie (KARUBAR, 1991) et deux autres expéditions françaises aux îles Wallis et Futuna (MUSORSTOM 7, 1992) et en Nouvelle-Calédonie (BATHUS 3, 1993), comprennent 11 espèces appartenant à 3 genres. Un genre et cinq espèces sont nouveaux pour la science et trois espèces n'avaient jamais été encore signalées en Indonésie.

INTRODUCTION

This report is based on the collections taken during a Franco-Indonesian expedition in Indonesia (KARUBAR, 1991), and two French expeditions at Wallis and Futuna Islands (MUSORSTOM 7, 1992) and off New Caledonia (BATHUS 3, 1993).

Eleven species, belonging to 3 genera, have been identified, of which one genus and 5 species are described as new, and 3 species (marked with an asterisk in the accompanying list) are reported for the first time from Indonesia.

CHEN Huilian (H. L. CHEN), 1997. — Crustacea Decapoda: Ethusinae (Dorippidae), mainly from the KARUBAR Cruise. In: A. CROSNIER & P. BOUCHET (eds), Résultats des Campagnes MUSORSTOM, Volume 16. *Mém. Mus. natn. Hist. nat.*, 172: 613-625. Paris ISBN: 2-85653-506-2.

Contribution no. 2557, Institute of Oceanology, Academia Sinica, Qinnгдаo, China.

LIST OF SPECIES

Subfamily ETHUSINAE Guinot, 1977

Parethusa glabra gen. et sp. nov.*Ethusa dilatidens* sp. nov.*Ethusa indica* Alcock, 1894*Ethusa indonesiensis* sp. nov.*Ethusa longidentata* sp. nov.*Ethusa sexdentata* (Stimpson, 1858)*Ethusa bicornuta* sp. nov.**Ethusa brevidentata* Chen, 1993*Ethusa desciscens* Alcock, 1896**Ethusa investigatoris* Alcock, 1896**Ethusa pubescens* Chen, 1993

SYSTEMATIC ACCOUNT

Subfamily ETHUSINAE Guinot, 1977

Genus *PARETHUSA* nov.

DIAGNOSIS. — Carapace longer than broad, swollen, dorsal and ventral surfaces smooth. Grooves and regions very indistinct. Front thin, separated into 2 broadly triangular teeth (the external side of the two median frontal; teeth is angled, suggestive of the beginning of a tooth) by a large, V-shaped notch. Basal segment of antennules not swollen, eyes located on ventral surface, eye-stalks short, stout and movable. Last two legs short and small, dactyli talon shaped.

TYPE SPECIES. — *Parethusa glabra* sp. nov. by present designation.

GENDER. — Feminine.

ETYMOLOGY. — The name is formed by a combination of the Greek word *par* (near) and the feminine name *Ethusa*.

REMARKS. — This new genus is closely related to *Ethusa* and *Ethusina*, but may be distinguished from them by the following:

	<i>Parethusa</i>	<i>Ethusa</i>	<i>Ethusina</i>
1. Carapace	smooth	granular and hairy, or granular and hairless	granular and hairy, or granular and hairless
2. Groove and regions	indistinct	distinct	distinct
3. Location of eyes	ventral surface	dorsal surface	ventral surface
4. Eyestalks	short, stout and movable	long, slender and movable	short, stout and immovable
5. Number of frontal teeth	2	4	4

The new genus is characterized by the presence of talon-shaped dactyli on the last two legs, the long and slender second pleopods and the teeth of the front (2 broadly triangular ones). I am inclined to consider *Parethusa* as a primitive member of the Ethusinae.

Parethusa glabra sp. nov.

Figs 1-2

MATERIAL EXAMINED. — Indonesia. Kai Islands. KARUBAR: SI. CP 35, 06°08'S, 132°45'E, 390-502 m, 27.10.1991: 1 ♂ holotype 8.3 x 8.0 mm (MNHN-B 22886).

DESCRIPTION. — Carapace inflated, slightly longer than broad. Dorsal and ventral surfaces smooth. Grooves and regions very indistinct, only urogastric and cardiac-intestinal regions slightly defined. Front thin, separated into two broadly-triangular teeth by a large V-shaped notch. Orbit very small, with a small V-shaped notch between frontal and exorbital teeth, dorsal surface with a broad, shallow groove. Exorbital teeth blunt, short, with outer border converging inwardly. Base of antennules not swollen. Eyes located on ventral surface, eyestalks short, stout and movable.

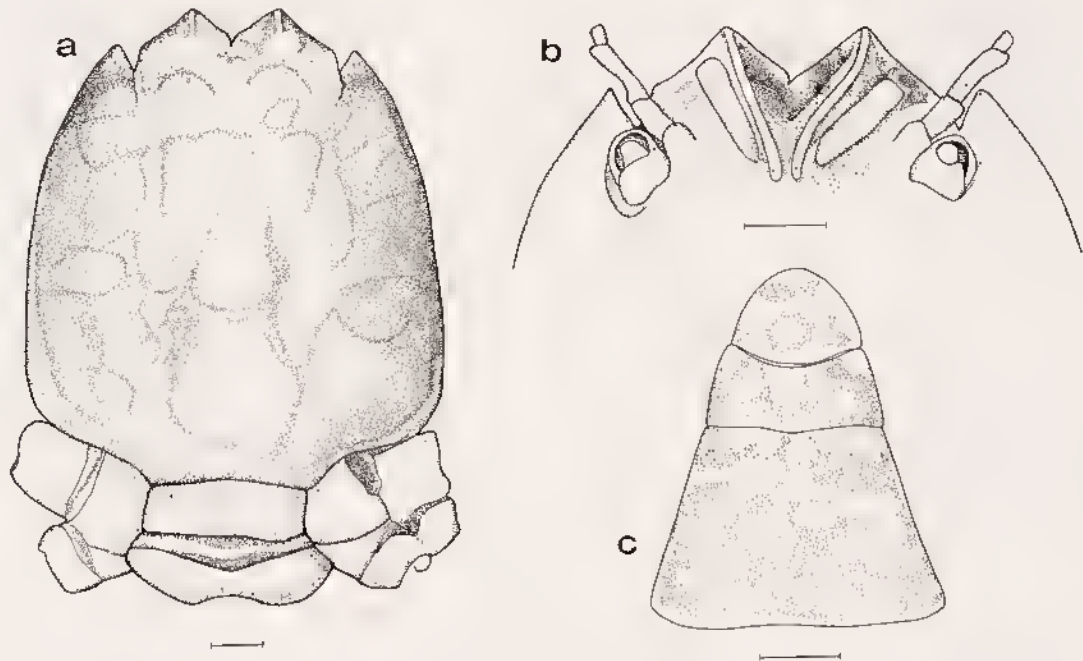


FIG. 1. — *Parethusia glabra* gen. et sp. nov., ♂ holotype (MNHN-B 22886): a, carapace; b, anterior portion of carapace (ventral view); c, male abdomen. Scales = 1 mm.

Chelipeds nearly symmetrical, surface smooth. Merus 4.5 times longer than high, palm twice as long as high. Fingers as long as propodus, cutting edges without teeth.

Second and third pereopods long and smooth, third longest and fourth shortest of all pereopods. Merus of third 7.5 times longer than high and propodus 5 times as long as high. Dactylus longer than propodus. Fourth pereopods short and stout, 3 times longer than high, carpus longer than propodus, propodus 2.5 times longer than high, distal part with some spines.

Male abdomen moderately broad, consisting of five segments (3rd-5th fused): first stout, 3 times as long as second. Base of fused segments strongly convex on each side, depressed in middle. Sixth segment 2.7 times longer than broad, anterior border depressed. Telson bluntly triangular.

Male first pleopods stout, basal half twice as broad as distal half, with a small notch distally. Second pleopods longer than first, distal part curved and thin.

Genus *ETHUSA* Roux, 1830

Ethusia dilatidens sp. nov.

Fig. 3

MATERIAL EXAMINED. — Indonesia, Tanimbar Islands, KARUBAR: st. CP 83, 09°23'S, 131°00'E, 285-297 m, 04.11.1991: 1 ♂ holotype 12.0 x 12.2 mm (MNHN-B 22887).

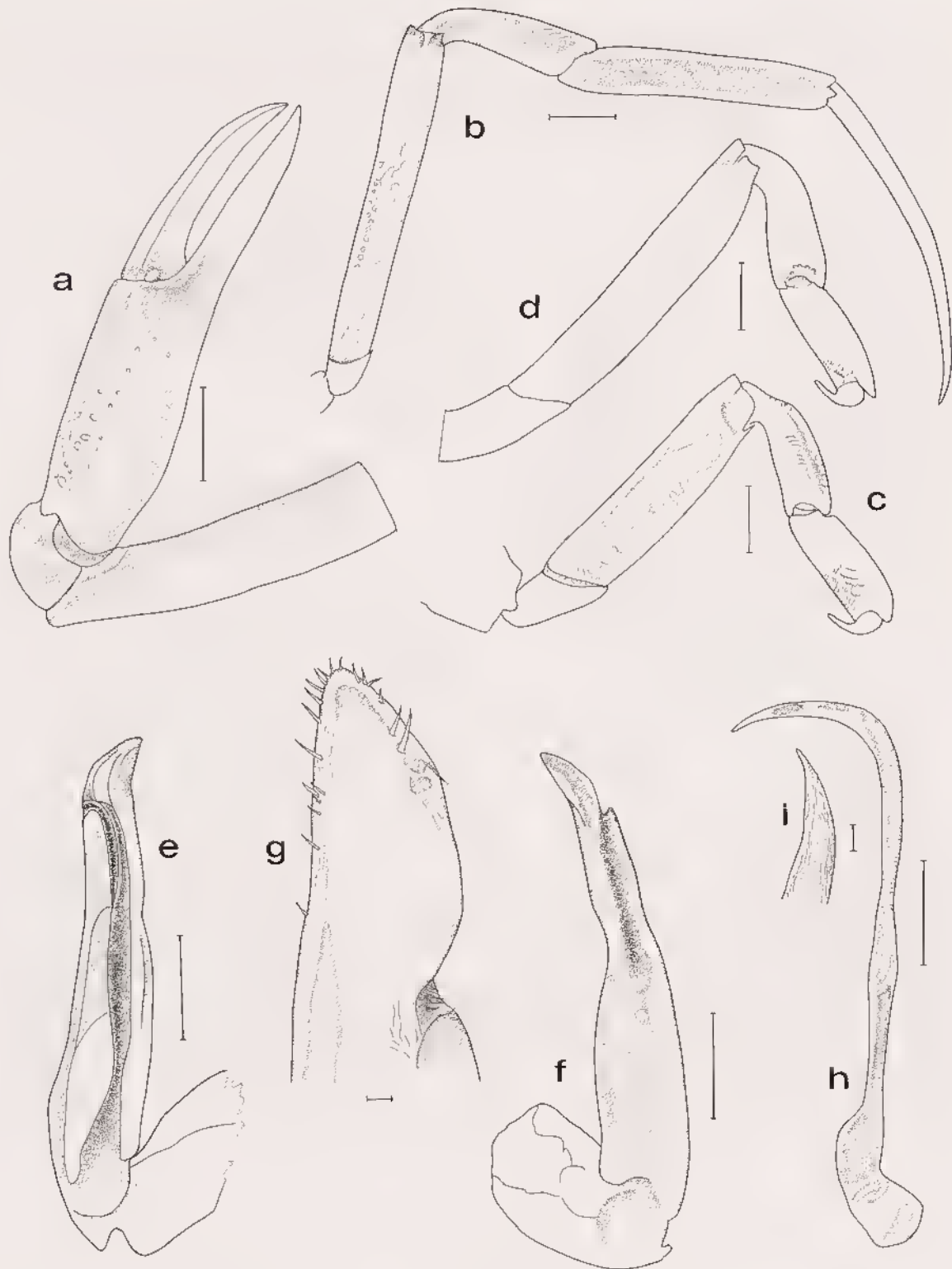


FIG. 2. — *Parethusia glabra* gen. et sp. nov., ♂ holotype (MNHN-B 22886): a, cheliped; b, third pereiopod; c, fourth pereiopod; d, fifth pereiopod; e-g, male first pereiopod; h-i, second male pleopod. Scales: a-f, h = 1 mm; g, i = 0.1 mm.

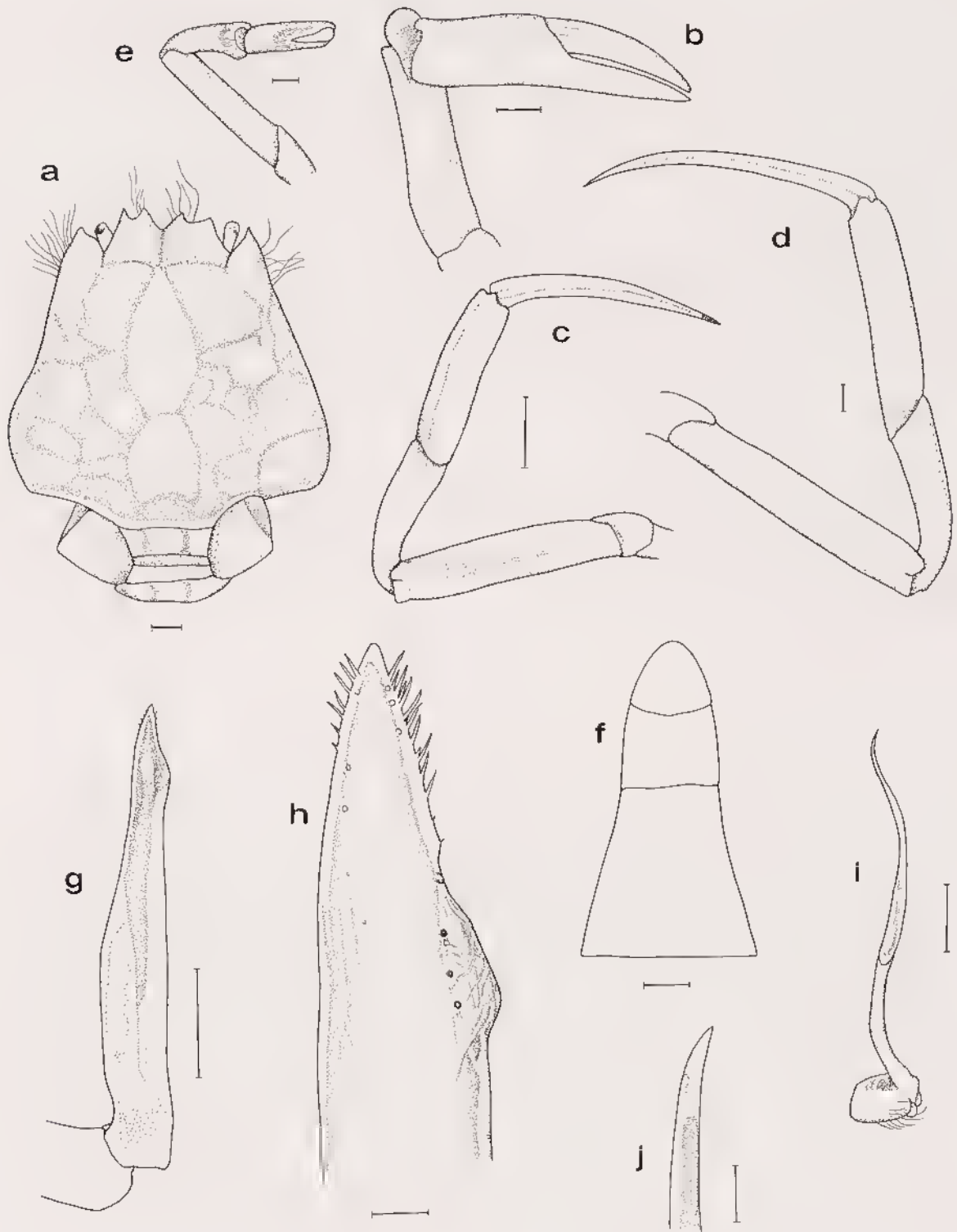


FIG. 3. — *Ethusa dilatidens* sp. nov., ♂ holotype (MNHN-B 22887): a, carapace; b, cheliped; c, second pereiopod; d, third pereiopod; e, fourth pereiopod; f, male abdomen; g-h, male first pleopod; i-j, male second pleopod. Scales: a-g = 1 mm, h, j = 0.1 mm.

DESCRIPTION. — Carapace slightly broader than long, dorsal surface with very fine granules and short pubescence. Cervical and branchial grooves and regions distinct. Branchial regions strongly convex, mesogastric and cardiac-intestinal regions slightly convex. Front divided into 4 short teeth by one V-shaped and 2 U-shaped notches. Exorbital teeth broad at base, slightly broader than long, outer borders converging inwards.

Chelipeds symmetrical, palm twice as long as high and slightly longer than fingers, cutting edges of fingers without teeth.

Second and third pereopods smooth and hairless. Third pereopod (left only) the longest: merus 5.6 times longer than high and propodus 4 times longer than high; merus of second pereopod only 4.5 times and propodus only 3.2 times longer than high. Right fourth pereopod short, with fine granules and short hairs near the tip. Carpus as long as propodus.

Male abdomen consisting of 5 segments (3rd-5th fused): first 1.5 times as long as second. Sixth segment 1.15 times longer than broad. Telson bluntly triangular, broader than long.

Male first pleopods moderately stout, basal half thicker than distal, gradually narrowed distally, slightly produced at distal 1/7, and both borders of distal end with some spines. Male second pleopods slender, tip sharp.

ETYMOLOGY. — The name is formed by a combination of the Latin *dilatatus* (expanded) and *dens* (tooth), in reference to the shape of the exorbital teeth.

REMARKS. — The new species is similar to *Ethusa sexdentata* (Stimpson, 1858) in the shape of the carapace, but can easily be distinguished from it by the exorbital teeth being broader than long, its outer border converging inwards, the symmetrical male chelipeds, and the form of the male first pleopod. *Ethusa dilatidens* is also similar to *E. obliquidens* Chen, 1993, but differs from the latter in having the exorbital teeth longer than broad; the telson of male abdomen broadly triangular or semi-circular; the first segment 1.5 times longer than the second; and the distal end of first pleopods bluntly rounded.

Ethusa indica Alcock, 1894

Ethusa indica Alcock, 1894: 405; 1896: 283. — ALCOCK & ANDERSON, 1895, pl. 14, fig. 2. — CHEN, 1993: 324. — NAGAI, 1995: 60, pl. 1, fig. 6.

MATERIAL EXAMINED. — Indonesia. *Kai Islands*. KARUBAR: st. CP 12.05°23'S, 132°37'E, 436-413 m, 23.10.1991: 1 ♂ 12.3 x 12.2 mm; 3 ♀ 9.0 x 9.0 - 13.0 x 12.9 mm (MNHN-B 22867). — St. CP 35, 06°08'S, 132°45'E, 390-502 m, 27.10.1991: 1 ♂ 5.8 x 5.6 mm (MNHN-B 22872).

Tanimbar Islands. KARUBAR: st. CP 38, 07°40'S, 132°27'E, 620-666 m, 28.10.1991: 1 ♂ 5.8 x 5.8 mm (MNHN-B 22868). — St. CP 53, 08°18'S, 131°41'E, 1026-1053 m, 30.10.1991: 1 ovig. ♀ 8.6 x 8.7 mm (MNHN-B 22871). — St. CP 54, 08°21'S, 131°43'E, 836-869 m, 30.10.1991: 1 ♂ 8.4 x 8.3 mm, 10 ♀ (2 ovig.) 10.5 x 10.8 - 12.0 x 12.0 mm (MNHN-B 22862). — St. CC 56, 08°16'S, 131°59'E, 552-549 m, 31.10.1991: 2 ♂ 5.0 x 4.9 - 5.9 x 5.9 mm (MNHN-B 22864). — St. CC 57, 08°19'S x 131°53'E, 603-620 m, 31.10.1991: 4 ♂ 5.5 x 5.4 - 6.5 x 6.4 mm; 1 ♂ 8.0 x 8.0 mm (MNHN-B 22857). — St. CP 59, 08°20'S, 132°11'E, 399-405 m, 31.10.1991: 7 ♀ (3 ovig.) 7.4 x 7.7 - 9.7 x 10.3 mm (MNHN-B 22856). — St. CP 62, 09°11'S, 132°42'E, 246-253 m, 01.11.1991: 1 ♂ 6.5 x 6.5 mm, 2 ♀ 7.0 x 7.1 - 7.2 x 7.5 mm (POLIPI). — St. CP 69, 08°42'S, 131°53'E, 356-368 m, 02.11.1991: 1 ♀ 7.0 x 8.0 mm (MNHN-B 22873). — St. CP 70, 08°41'S, 131°47'E, 410-413 m, 02.11.1991: 4 ♂ 6.7 x 6.7 - 7.0 x 8.0 mm, with parasitic Isopoda (MNHN-B 22869). — St. CP 71, 08°38'S, 131°44'E, 477-480 m, 02.11.1991: 3 ♂ 6.3 x 6.1 - 6.5 x 6.6 mm, 5 ♀ 7.0 x 7.2 - 7.9 x 8.0 mm (MNHN-B 22866). — St. CP 73, 08°29'S, 131°33'E, 840-855 m, 02.11.1991: 1 ovig. ♀ 10.9 x 11.0 mm (POLIPI). — St. CP 75, 08°46'S, 131°36'E, 400 m, 03.11.1991: 2 ♂ 6.0 x 6.3 - 6.0 x 6.5 mm, 2 ♀ 7.0 x 7.0 - 8.1 x 8.2 mm (MNHN-B 22858). — St. CP 76, 08°50'S, 131°33'E, 400-401 m, 03.11.1991: 1 ♂ 6.3 x 6.3 mm, 1 ♀ 7.0 x 7.2 mm (POLIPI). — St. CP 87, 08°47'S, 130°49'E, 1017-1024 m, 05.11.1991: 2 ♀ 8.3 x 8.4 mm - 8.5 x 8.5 mm (MNHN-B 22859). — St. CP 89, 08°39'S, 131°08'E, 1048-1084 m, 05.11.1991: 4 ♂ 7.8 x 7.4 - 9.0 x 8.9 mm, 6 ♀ (2 ovig.) 8.5 x 8.5 - 10.8 x 11.0 mm (MNHN-B 22860). — St. CP 91, 08°44'S, 131°05'E, 884-890 m, 05.11.1991: 2 ♂ 7.4 x 7.2 - 7.5 x 7.3 mm, 8 ♀ 8.0 x 8.0 - 10.3 x 10.3 mm (MNHN-B 22863).

DISTRIBUTION. — This species is very common in the Indo-Pacific Region, ranging from the Maldives Islands and Sri Lanka eastward to the Philippines, China and Japan, and southward to Indonesia and New Caledonia.

Ethusa indonesiensis sp. nov.

Fig. 4

MATERIAL EXAMINED. — **Indonesia**. *Kai Islands*. KARUBAR: st. DW 18, 05°18'S, 133°01'E, 205-212 m, 24.10.1991: 1 ♂ holotype 7.5 x 7.5 mm (MNHN-B 22888).

DESCRIPTION. — Carapace as long as broad, dorsal surface covered with very fine granules and short pubescence. Grooves shallow and broad. Regions distinct: protogastric, metabranchial and cardiac regions strongly convex, mesogastric, metagastric, urogastric and intestinal regions slightly convex. Posterior part of orbit and mid-line of front depressed. Front divided into 4 subequal teeth. Exorbital teeth short and broad at base, distal ends sharp.

Male chelipeds very unequal: merus of larger cheliped 3 times longer than high, palm swollen, longer than high. Fingers shorter than palm, cutting edges without teeth; merus of smaller cheliped 4 times as long as high, palm twice as long as high. Fingers longer than palm, cutting edges without teeth.

Third pereopods longest, meri 7 times longer than high. Propodi slightly shorter than dactyli and 5.5 times longer than high. Dactyli claw-shaped.

Male abdomen consisting of five segments (3rd-5th segments fused): first as long as second and sixth as long as telson. Telson bluntly triangular.

Male first pleopods stout, basal 4/5 stouter, distal part tapered and with some spines. Second pleopods longer than first, distal half lamelliform.

ETYMOLOGY. — This species is named after the country where it has been found, Indonesia.

REMARKS. — This species is similar to *Ethusa paragymaea* Chen, 1993 but differs from the latter in having the carapace slightly longer, the male first pleopods with a foot-shaped tip, and the palm of the smaller cheliped as long as the fingers.

Ethusa longidentata sp. nov.

Fig. 5

MATERIAL EXAMINED. — **Indonesia**. *Kai Islands*. KARUBAR: st. DW 28, 05°31'S, 132°54'E, 448-467 m, 26.10.1991: 1 ♂ holotype 6.4 x 6.0 mm (MNHN-B 22884); 1 ♀ paratype 7.0 x 7.0 mm (MNHN-B 22889).

DESCRIPTION. — Carapace longer than broad in male, as long as broad in female, dorsal surface covered with fine granules, borders of exorbital and frontal teeth with sharp granules. Grooves and regions distinct, posterior part (behind frontal and orbital regions) concave. Protogastric and mesogastric regions slightly convex, metagastric and urogastric regions depressed. Cardiac-intestinal and branchial regions convex. Front divided into 4 teeth by one V-shaped and 2 U-shaped notches. Exorbital teeth long and acute, stouter in male than in female.

Merus, carpus and palm of male cheliped (right only) covered with fine granules. Palm longer than high and slightly shorter than fingers. Fingers smooth, cutting edges without teeth.

Pereopods covered with fine granules. Third pleopod longest, merus of medium length, 4 times (right), 5 times (left) as long as high. Carpus long. Propodus 3.8 times as long as high. Dactylus longer than propodus. Merus of P2 4 times and palm 3 times longer than high. Last two legs slender and short.

Male abdomen with fine granules, consisting of five segments (3rd-5th fused): first segment stout, 3 times as long as second. Fused segments trapezoid, base swollen. Sixth segment rectangular. Telson bluntly rounded.

Male first pleopods stout, slightly curved, twisted and gradually narrowed from base to distal end; distal part with spines. Second pleopods slender, distal end thin and sharp.

ETYMOLOGY. — The name is formed by a combination of the Latin *longus* (long) and *dentata* (toothed), in reference to the shape of the exorbital tooth.

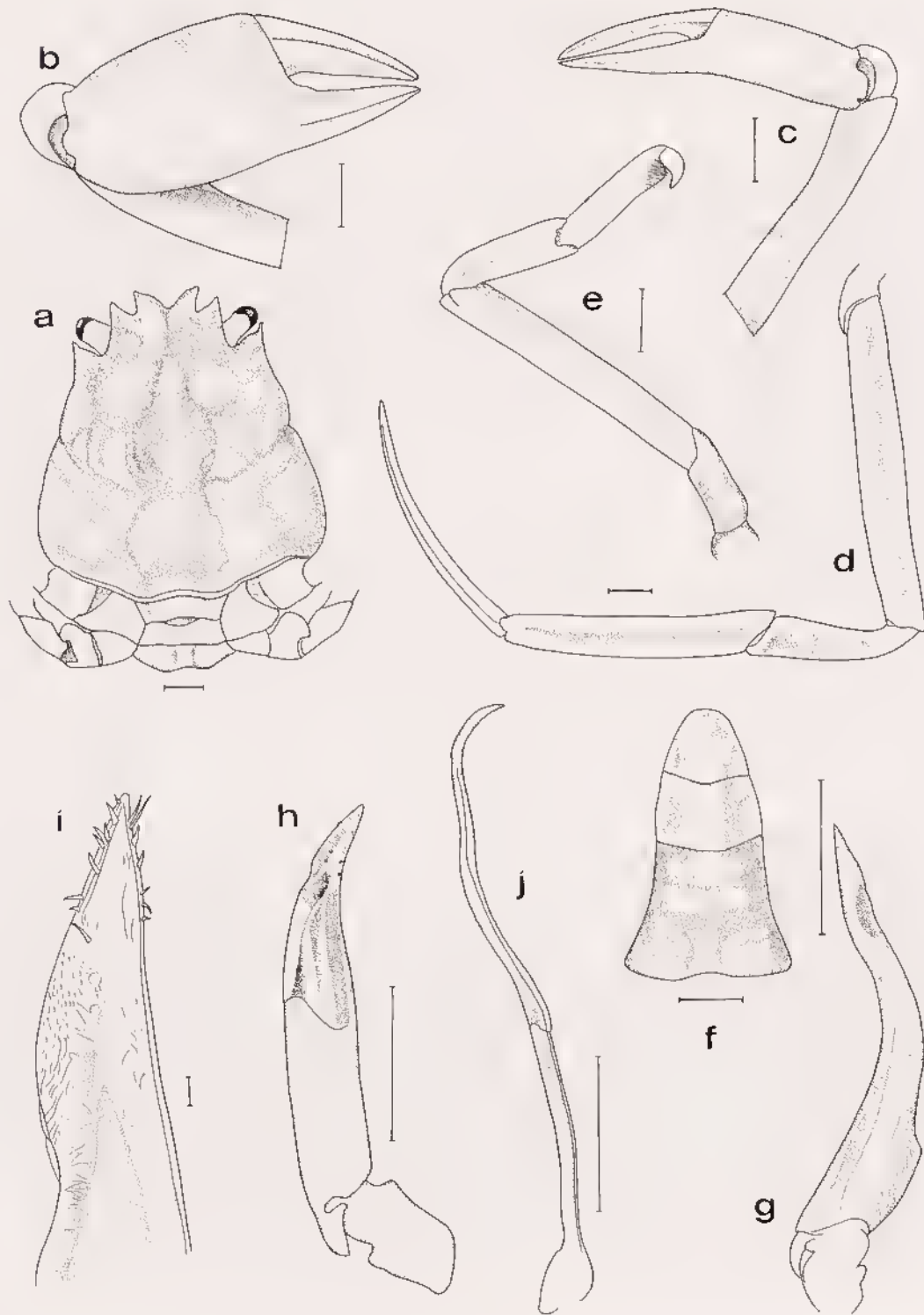


FIG. 4. — *Ethusa indonesiensis* sp. nov. ♂ holotype (MNHN-B 22888): a, carapace; b, larger cheliped; c, smaller cheliped; d, third pereiopod; e, fifth pereiopod; f, male abdomen; g-i, first pleopod; j, second pleopod. Scales: a-g, j = 1 mm; i = 0.1 mm.

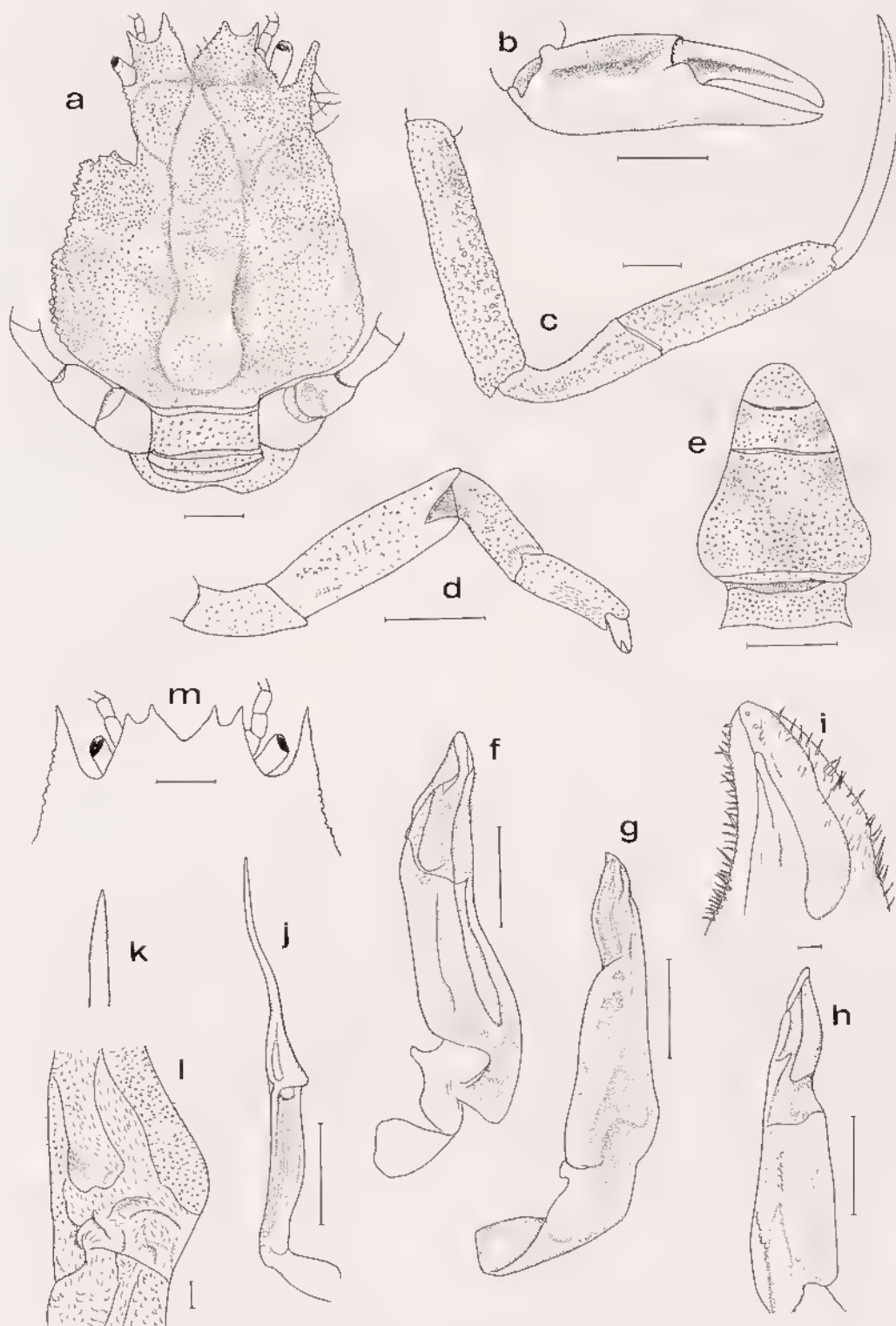


FIG. 5. — *Ethusa longidentata* sp. nov. **a-l**: ♂ holotype (MNHN-B 22884): **a**, carapace (damaged); **b**, cheliped; **c**, third pereiopod; **d**, fifth pereiopod; **e**, abdomen; **f-i**, first pereiopod; **j-l**, second pereiopod. — **m**: ♀ paratype (MNHN-B 22889), anterior portion of carapace. Scales: **a-h**, **j**, **m** = 1 mm; **i**, **k-l** = 0.1 mm.

REMARKS. — This new species is similar to *Ethusa makasarica* Chen, 1993 but they can be distinguished as follows:

	<i>Ethusa makasarica</i>	<i>Ethusa longidentata</i>
Carapace	pubescent and granular	granular and hairless
First two segments of male abdomen	first 1.28 times as long as second	first 3 times as long as second
Male first pleopods	flat and thin	stout

Ethusa sexdentata (Stimpson, 1858)

Dovripe sexdentata Stimpson, 1858: 163.

Ethusa sexdentata - STIMPSON, 1907: 168, pl. 19, fig. 4. — CHEN, 1993: 335, fig. 14. — NAGAI, 1995: 59, pl. 1, fig. 4.

MATERIAL EXAMINED. — Indonesia. *Kai Islands*. KARUBAR: st. CP. 25, 05°30'S, 132°52'E, 336-346 m, 26.10.1991: 1 ♂ 13.4 x 13.0 mm (POLIPI).

Taniubar Islands. KARUBAR: st. CP. 79, 09°16'S, 131°22'E, 239-250 m, 03.11.1991: 2 ♀ 8.0 x 8.1 mm, 9.5 x 9.5 mm, ovig. (MNHN-B 22880).

DISTRIBUTION. — Japan, China, Philippines, Indonesia, New Caledonia, Andaman Sea and Nicobar Islands.

Genus *ETHUSINA* Smith, 1884

Ethusina bicornuta sp. nov.

Fig. 6

MATERIAL EXAMINED. — Indonesia. *Taniubar Islands*. KARUBAR: st. CP 87, 08°47'S, 130°49'E, 1017-1024 m, 05.11.1991: 1 ♂ holotype 7.6 x 7.0 mm (MNHN-B 22885).

DESCRIPTION. — Carapace covered with fine sparse granules and pubescence, longer than broad. Grooves and regions distinct: protogastric, mesogastric and cardiac-intestinal regions slightly convex, but lower than metabranchial regions. Front swollen, divided into 4 teeth by 3 notches: median frontal teeth short, half as long as lateral teeth. Exorbital teeth needle-like, only reaching to base of lateral frontal teeth. Lateral borders of carapace arched. Posterior border slightly convex.

Chelipeds slightly unequal, right somewhat larger than left: right palm 1.43 times (left 1.54 times) as long as high. Both palms as long as fingers. Right movable finger with blunt, obscure teeth and a large tooth near base; immovable finger with blunt teeth; cutting edges of smaller cheliped with blunt teeth.

Second and third pereopods smooth and hairless. Third pereopod longest: merus 9 times as long as high and propodus 7.5 times as long as high, dactylus very long. Last two pereopods slender and short, with short, sparse hairs.

Male abdomen consisting of five segments (3rd-5th fused): first two segments subequal. Fused segment depressed at middle of base. Sixth segment rectangular. Telson semicircular.

Male first pleopods stout, basal 2/3 swollen, twice as broad as distal 1/3, distal end divided into two horns by a V-shaped notch.

ETYMOLOGY. — The name is formed by a combination of the latin *bis* (two) and *cornutus* (horned), in reference to the distal end of the first pleopods.



FIG. 6. — *Ethusina bicornuta* sp. nov., ♂ holotype (MNHN-B 22885): a, carapace; b, anterior portion of carapace (ventral); c, larger cheliped; d, smaller cheliped; e, fifth pereiopod; f, abdomen; g-h, first pleopod; i-j, second pleopod. Scales: a-g, i = 1 mm; h, j = 1.1 mm.

REMARKS. — This new species closely resembles *Ethusina investigatoris* Alcock, 1895, but differs from the latter in having shorter exorbital and lateral frontal teeth, the first two segments of male abdomen subequal, and the distal end of the first pleopod with two horns.

Ethusina brevidentata Chen, 1993

Ethusina brevidentata Chen, 1993: 337, fig. 16.

MATERIAL EXAMINED. — **Indonesia**. *Kai Islands*. KARUBAR: st. CC 21, 05°14'S, 133°00'E, 688-694 m, 25.10.1991: 1 ♀ 8.5 x 8.7 (MNHN-B 22882).

DISTRIBUTION. — Known only from New Caledonia and Indonesia.

Ethusina desciscens Alcock, 1896

Ethusina desciscens Alcock, 1896: 286. — ALCOCK & McARDLE, 1903: 62, fig. 2,2a. — CHEN, 1993: 337.

MATERIAL EXAMINED. — **Indonesia**. *Taniubar Islands*. KARUBAR: st. CP 53, 08°18'S, 131°41'E, 1026-1053 m, 30.10.1991: 1 ovig. ♀ 8.9 x 9.3 mm (MNHN-B 22876). — St. CP 87, 08°47'S, 130°49'E, 1017-1024 m, 05.11.1991: 1 ♀ 8.4 x 8.5 mm (MNHN-B 22875). — St. CP 89, 08°39'S, 131°08'E, 1058-1084 m, 05.11.1991: 3 ovig. ♀ 9.0 x 9.6 mm, 9.1 x 9.7 mm, 9.9 x 10.1 mm (MNHN-B 22877). — St. CP 91, 08°44'S, 131°05'E, 884-891 m, 05.11.1991: 2 ♀ 9.0 x 9.2, 9.2 x 9.4 mm (ovig.) (POLIPI).

DISTRIBUTION. — China, the Philippines, Indonesia, Andaman Sea, Laccadive Sea and Madagascar.

Ethusina investigatoris Alcock, 1896

Ethusina investigatoris Alcock, 1896: 285. — ALCOCK & McARDLE, 1903: fig. 3.3a. — CHEN, 1986: 135, fig. 14.

MATERIAL EXAMINED. — **Indonesia**. *Tanimbar Islands*. KARUBAR: st. CP 87, 08°47'S, 130°49'E, 1017-1024 m, 05.11.1991: 2 ♂ 7.4 x 7.2, 7.9 x 7.6 mm (MNHN-B 22883).

DISTRIBUTION. — East China Sea, Bay of Bengal and Laccadive Sea, at depths of 1115 to 2378 m.

Ethusina pubescens Chen, 1993

Ethusina pubescens Chen, 1993: 341, fig. 19.

MATERIAL EXAMINED. — **Wallis and Futuna Islands**. MUSORSTOM 7: st. DW 565, 11°47'04"S, 178°25'03"W, 900 m, 20.05.1992: 1 ♂ 7.6 x 7.5 mm (MNHN-B 22879).

New Caledonia. BATHUS 3: st. CP 842, 23°05'S, 166°48'E, 830 m, 01.12.1993: 1 ♂ 10.9 x 11.0 mm (MNHN-B 22878).

DISTRIBUTION. — New Caledonia, Wallis and Futuna Islands.

ACKNOWLEDGEMENTS

I am very grateful to Alain CROSNIER and Bertrand RICHER DE FORGES (ORSTOM) for providing the material for this study; to Prof. J. Y. LIU (Institute of Oceanology, Academia Sinica, Qingdao) for reading the manuscript; to Mrs LIANG (Youping Marine Product Museum, Qingdao) for drawing some of the figures; and to R.B. MANNING (Natural History Museum, Washington) and Peter NG (Singapore University) for reviewing the manuscript.

REFERENCES

- ALCOCK, A., 1894. — Natural history notes from H.M. Indian marine survey steamer "Investigator", Series 2, No. 1. On the results of deep-sea dredging during the season of 1890-1891. *Annals and Magazine of Natural History*, ser. 6, **13**: 225-245, 321-334, 400-411.
- ALCOCK, A., 1896. — Materials for a carcinological fauna of India. No. 2. The Brachyura Oxystomata. *Journal of the Asiatic Society of Bengal*, **65** (2): 134-296, pls 6-8.
- ALCOCK, A. & ANDERSON, A.S.R., 1895. — Crustacea Part III. In: *Illustrations of the zoology of the Royal Indian marine surveying steamer "Investigator"*, pls 9-15. Calcutta.
- ALCOCK, A. & McARDLE, A.F., 1903. — Crustacea Part X. In: *Illustrations of the zoology of the Royal Indian marine surveying steamer "Investigator"*, pls 56-67. Calcutta.
- CHEN Huilian, 1986. — Studies on the Dorippidae (Crustacea Brachyura) of Chinese waters. *Transactions of the Chinese Crustacean Society*, (1): 118-139, figs 1-15. [In Chinese with English summary]
- CHEN Huilian & XU Zhenxiong, 1991. — Studies on the crabs of the Nansha Islands, China. In: *Contributions on marine biological research of the Nansha Islands and the neighbouring waters*, volume 3: 48-106, 36 figs.
- CHEN Huilian, 1993. — Crustacea Decapoda: Dorippidae of New Caledonia, Indonesia and the Philippines. In: A. CROSNIER (ed.), *Résultats des Campagnes MUSORSTOM, Volume 10. Mémoires du Muséum National d'Histoire Naturelle*, **156**: 315-345, figs 1-20.
- NAGAI, S., 1995. — Some remarkable crabs of Wakayama prefecture IV. *Nanki Seibutu*, **37** (1): 58-64, 1 pl. [in Japanese].
- STIMPSON, W., 1858. — Prodomus descriptionis animalium evertibratorum, quae in expeditione ad oceanum Pacificum septentrionalem, a Republica Federata missa, Cadwaladaro Ringgold et Johanne Rodgers ducibus, observavit et descripsit W. Stimpson. Pars VI. [Preprint from] *Proceedings of the Academy of Natural Sciences of Philadelphia*, **10**: 159-163 [57-61].
- STIMPSON, W., 1907. — Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition, 1853-1856. *Smithsonian Miscellaneous Collections*, **49**: 1-240, pls 1-26.